Remarks

Thorough examination by the Examiner is noted and appreciated.

The claims have been amended to correct grammatical errors and to re-add previously removed language (i.e., directing rather than impacting), as well as adding limitations from dependent claims to the independent claims (e.g. nozzle plate) to overcome Examiner rejections. No new matter has been added.

Claim objections

Claim 21 has been amended to overcome Examiners objection.

Claim 25 has been amended to overcome Examiners objection (Examiner has inadvertently referred to claims 15 which has been cancelled).

Claim Rejections under 35 USC 112

Claim 17 has been amended to overcome Examiners rejection of claim 20.

Claim Rejections under 35 USC 102(b)/103(a)

1. Claims 1, 5 and 24 stand rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as being unpatentable over Matsuka (5,520,857)

Matsuka teaches an evaporator including a sealed container where carrier gas is fed into the sealed container and includes a **carrier gas blower that directs the carrier gas radially and/or upwardly to contact the upper internal surface of the sealed container** (see abstract; Figures 3, 5, 8, 11, 12, and 13; col 5, lines 58-60; col 4, lines 3-10; col 4, lines 44-52; col 5, lines 22-24).

Matsuka does not disclose or teach "a nozzle assembly comprising a plurality of openings, said plurality of openings disposed above said exposed surface and arranged for directing a plurality of gas streams onto said exposed surface to form said

primer vapor in a vapor collection space above said liquid vapor interface" as Applicants have disclosed and claimed.

Rather Matsuka **teaches away from directing a plurality of gas streams onto an exposed liquid surface** (see Figure 4; col 4, lines 58-63). It is noted that Applicants also discuss and disclose the prior art present by Matsuka in Figure 4, and problems presented thereby including droplet formation, which Applicants disclosed and claimed invention overcomes. Thus the invention of Matsuka addresses a problem similar to one solved by Applicants disclosed and claimed invention, but in a different manner, and which operates by a different principal of operation, i.e., **avoiding directing a gas stream onto the liquid surface.**

Thus Matsuka is insufficient to make out a *prima facie* case of anticipation, or in the alternative, a case obviousness with respect to Applicants disclosed and claimed invention.

Applicants note that Examiner is required to interpret the claims by giving the terms thereof the **broadest reasonable interpretation in their ordinary usage as they would be understood by one of ordinary skill in the art in light of the written specification, including drawings,** unless another meaning

is intended by appellants as established in the written specification, and without reading into the claims any limitation or particular embodiment disclosed in the specification. *See e.g., In re Morris*, 127 F.3d. 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir 1997); *In re Zeltz* (893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

2. Claims 1, 3, 5, 17, 18, 20, and 22-24 stand rejected under 35 USC 103(a) as being unpatentable over Fukada (5, 733, 375) in view of Matsuka (5,520,857), and further in view of Schmohl

(2004/0146649).

Applicants reiterate the comments made above with respect to Matsuka and again note that Matsuka **teaches away from Applicants disclosed and claimed invention of directing a plurality of gas streams onto an exposed liquid surface** (see Figure 4; col 4, lines 58-63).

On the other hand, Fukada discloses an HDMS vaporizer having several embodiments; several embodiments include a **gas bubbler** disposed at a bottom portion of a liquid holding tank submerged in the liquid (e.g., Figures 1, 3, 5, item 4). In addition, Fukada discloses an embodiment without a gas bubbler where a **single gas stream** is directed onto a liquid surface and having a configuration similar to that disclosed by Applicants as prior art (see Fukada Figure 6, Applicants Figure 1), which presents the very problem, Applicants disclosed and claimed invention overcomes (see col 8, lines 18-20, lines 27-30; Figure 6).

Thus, Fukada fails to disclose several elements of Applicants disclosed and claimed invention **including Applicants claimed nozzle assembly** in claims 1 and 9 as well as Applicants claimed method in claim 17 including "**directing an inert gas**

comprising a plurality of gas streams onto said exposed surface to form a vapor above said liquid vapor interface"

Examiner argues that Applicants claims do not **exclude** gas bubblers. Applicants respond that the gas bubblers of Fukada could not reproduce Applicants invention as claimed, giving Applicants terms a reasonable interpretation "**in their ordinary usage as they would be understood by one of ordinary skill in the art in light of the written specification, including drawings**". Moreover, there is no tenant of Patent law that requires the exclusion of Examiners interpretation of particular terms.

For example, the claim must be interpreted as a whole, and Examiner has clearly avoided the meaning of selected portions in the claims "**in their ordinary usage as they would be understood by one of ordinary skill in the art in light of the written specification, including drawings**" such as:

"providing the liquid primer in said tank body to form an exposed surface of said liquid primer, said exposed surface comprising a liquid vapor interface".

Thus, even assuming *arguendo*, a proper motive for combining

the teachings of Matsuka with Fukada such combination does not produce Applicants disclosed and claimed invention.

The additional fact that Schmohl discloses that HDMS is known to have a high vapor pressure does not further help Examiner in establishing a *prima facie* case of obviousness with respect to Applicants disclosed and claimed invention.

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

"we do not pick and choose among the individual elements of assorted prior art references to recreate the claimed invention, but rather we look for some teaching or suggestion in the references to support their use in a particular claimed combination" *Symbol Technologies, Inc. v. Opticon, Inc., 935 F.2d 1569, 19 USPQ2d 1241 (Fed. Cir. 1991).*

3. Claim 19 stands rejected under 35 USC 103(a) as being unpatentable over Fukada (5, 733, 375) in view of Matsuka

(5,520,857), and further in view of Schmohl (2004/0146649), as applied above, and further in view of Applicants discussion of the problem presented in the prior art.

Applicants reiterate the statements made above with respect to Fukada, Matsuka, and Schmohl.

With respect to claim 19, it is improper for Examiner to look to Applicants disclosure for motivation to combine individual aspects of Applicants disclosed and claimed invention with other references to recreate Applicants disclosed and claimed invention.

The **teaching or suggestion** to make the claimed combination and the **reasonable expectation of success** must both be found in the prior art, and **not based on applicant's disclosure.**" *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

4. Claims 9-11 stand rejected under 35 USC 103(a) as being unpatentable over Fukada (US 5,733,375), in view of Yamaguchi (US 5,803,938) or Martin (US 3,608,280.

Applicants reiterate the comments made above with respect to

Fukada.

Yamaguchi discloses a **bubbling tube** submerged in a liquid, and in one embodiment, **a diffusion plate over the bubbling tube** (Figures 18 and 19, col 27, line 44 to col 28, line 23).

Martin discloses **a series of diffusion plates for bubbling air through** (submerged in) **liquid** in what appears to be an air cleaning system (see e.g., Figure 2).

Yamaguchi and Martin disclose **gas bubblers for forming gas bubbles within a liquid**, similar to embodiments disclosed by Fukada (e.g., Figures 1, 3, 5, item 4).

The **gas bubblers** of Fukada, Yamaguchi, and Martin operate by a **different principal of operation** than Applicants disclosed **and claimed** invention. That is, with gas bubblers, vaporization occurs by vaporization into the gas bubble as it rises through the liquid, thus depending on a variety of different factors such as residence time of the bubbles in the liquid etc., rather than upon gas stream directed onto the surface of a liquid to effectuate evaporation as in Applicants disclosed and claimed invention. The modification of Fukada, Yamaguchi, or Martin to

achieve Applicants disclosed and claimed invention would render the apparatus and methods of Fukada, Yamaguchi, or Martin unsuitable for their intended operation.

Even assuming *arguendo* a proper motivation for combining Fukada with Yamaguchi or Martin, which Applicants do not concede, such combination does not produce Applicants disclosed and claimed invention.

"If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." *In re Ratti, 270 F.2d 810, 123, USPQ 349 (CCPA 1959).*

"If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." *In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).*

5. Claims 1-3, 5, 9-11, 13, 24 and 25 stand rejected under 35 USC 102(a) as being anticipated by or, in the alternative, under

35 USC 103(a) as being unpatentable over Tomkins (6,561,498).

Tomkins, also discloses a bubbler apparatus for vapor generation where a plurality of small generator tubes are submerged below an exposed liquid surface formed by a contained liquid in a tank body for forming bubbles (see Abstract, Figure 3).

Examiner is clearly mistaken in asserting that that Tomkins discloses a nozzle assembly (item 12, Figure 3) as Applicants claim:

"a nozzle assembly comprising a nozzle plate, said nozzle plate comprising a plurality of openings, said plurality of openings disposed above said exposed surface and arranged for directing a plurality of gas streams onto said exposed surface to form said primer vapor in a vapor collection space above said liquid vapor interface."

Rather, Tomkins discloses a carrier **gas distribution plenum** from which a plurality of small diameter generator tubes extend that are **submerged below the exposed surface** of the liquid for producing **bubbles within the liquid**.

Applicants reiterate, the comments made above with respect to the gas bubblers of Fukada, Yamaguchi, and Martin i.e., gas bubblers operate by a **different principal of operation** than Applicants disclosed **and claimed** invention and the modification of the gas bubbler of Tomkins would be made unsuitable for its intended operation by any modification to achieve Applicants disclosed and claimed invention.

Thus Tomkins is clearly insufficient to make out either a *prima facie* case of anticipation or obviousness.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947*

F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

6. Claims 17-23 stand rejected under 35 USC 103(a) as being unpatentable over Tomkins (6,561,498) in view of Fukuda (5,733, 375).

Applicants reiterate the comments made above with respect to Tomkins and Fukuda.

Applicants again note that the fact that Fukuda teaches that that a gas bubbler is used to form vaporized HDMS does not, in combination with the gas bubbler of Tomkins further help Examiner in establishing a *prima facie* case of obviousness with respect to Applicants disclosed and claimed invention.

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

7. Claims 1, 3, 5, 17, 18, 20 and 22-24 stand rejected under 35

USC 103(a) as being unpatentable over Fukuda (5,733,375) in view of Coombs (1,336,070) and Brunner (545,048).

Applicants reiterate the comments made above with respect to Fukuda.

Coombs teaches the non-analogous art of a carburetor. In the apparatus of Coombs, air is delivered into or through liquid fuel to effect a turbulent churning action and effect a complete and thorough intermingling of the air and liquid fuel (see col 1, lines 18-24; col 2, lines 20-31). The apparatus of Coombs **includes a cone** with a plurality of openings to allow adjustment of full or partial submersion of the cone into the fuel.

There is no apparent motivation to combine the teachings of Coombs who disclose a carburetor, with the teachings of Fukada, who disclose an HDMS vaporizer for treating substrates. For example the full or partial submersion of the perforated cone of Coombs would destroy the principle of operation of the **submerged bubbler of Fukada** or the **single downward projecting pipe** of Fukada directing a single gas stream onto the surface of the liquid.

Moreover, the apparatus of Coombs would destroy the purpose of Applicants disclosed and claimed purpose of reducing primer vapor droplet formation.

Thus, even assuming *arguendo*, *analogous* art, and a proper motivation for combining the teachings of Coombs and Fukada, such combination does not produce Applicants disclosed and claimed invention.

On the other hand, Brunner also discloses non-analogous art of carburetors and does not recognize the problem that Applicants have solved by their disclosed and claimed invention "A method of generating a primer vapor from a liquid primer for treating a substrate to reduce primer vapor droplet formation".

Brunner teaches an apparatus where **one or more downwardly projecting pipes** terminate a short distance above the surface of a liquid hydrocarbon to cause air currents to impinge directly on the surface (see col 1, lines 12-20).

Even assuming *arguendo*, *analogous* art, and a proper motivation for combining the teachings of Brunner and Fukada, such combination does not produce Applicants disclosed and

claimed invention.

Moreover, Brunner's **one or more** downward projecting pipes (similar to Fukuda) create the very problem that Applicants have disclosed as a problem in the prior art which their disclosed and claimed invention overcomes.

"we do not pick and choose among the individual elements of assorted prior art references to recreate the claimed invention, but rather we look for some teaching or suggestion in the references to support their use in a particular claimed combination" *Symbol Technologies, Inc. v. Opticon, Inc., 935 F.2d 1569, 19 USPQ2d 1241 (Fed. Cir. 1991).*

"If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." *In re Ratti, 270 F.2d 810, 123, USPQ 349 (CCPA 1959).*

8. Claims 2, 9-11, 13, and 25 stand rejected under 35 USC 103(a) as being unpatentable over Fukuda (5,733,375) in view of Coombs (1,336,070) and Brunner (545,048), above, and further in

view of Applicants discussion of the prior art.

Applicants reiterate the comments made above with respect to Fukuda, Coombs, and Brunner.

With respect to claim 19, it is improper for Examiner to look to Applicants disclosure for motivation to combine individual aspects of Applicants disclosed and claimed invention with other references in order to recreate Applicants disclosed and claimed invention.

The **teaching or suggestion** to make the claimed combination and the **reasonable expectation of success** must both be found in the prior art, and **not based on applicant's disclosure.**" *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

9. Claims 2, 9-11, 13, and 25 stand rejected under 35 USC 103(a) as being unpatentable over Fukuda (5,733,375) in view of Coombs (1,336,070) and Bruner (545,048), above, and further in view of Tomkins (6,561,498).

Applicants reiterate the comments made above with respect to

Fukuda, Coombs, and Brunner and Tomkins.

Applicants reiterate that the **bubbler** of Tomkins operates by a different principle of operation than the **carburetors** of Coombs and Brunner, and any combination would change the principle of operation, making either the bubblers or carburetors unsuitable for their intended purpose.

Applicants also reiterate that Tomkins does not disclose a **nozzle plate** as Applicants claim, but rather discloses a carrier **gas distribution plenum** from which a **plurality of small diameter generator tubes extend** that are **submerged below the exposed surface** of the liquid for producing **bubbles within the liquid.**

Even assuming *arguendo*, that the art of Coombs and Brunner are analogous to that of either Fukada or Tomkins, which Applicants do not concede, and further that there is a proper motivation for combining the teachings of references which operate by a **different principle of operation,** which Applicants do not concede, such combination does not produce Applicants disclosed and claimed invention.

"A prior art reference must be considered in its entirety,

i.e., as a whole including portions that would lead away from the claimed invention." *W.L. Gore & Associates, Inc., Carlock, Inc., 721 F.2d, 1540, 220 USPQ 303 (Fed Cir. 1983), cert denied, 469 U.S. 851 (1984).*

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).*

Applicants note that Examiner is required to "interpret the claims by giving the terms thereof the **broadest reasonable interpretation in their ordinary usage as they would be understood by one of ordinary skill in the art in light of the written specification, including drawings,** unless another meaning is intended by appellants as established in the written specification, and without reading into the claims any limitation or particular embodiment disclosed in the specification." *See e.g., In re Morris, 127 F.3d. 1048, 1054 55, 44 USPQ2d 1023, 1027 (Fed. Cir 1997); In re Zeltz (893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).*

The Claims have been amended to clarify Applicants'

disclosed and claimed invention. A favorable reconsideration of Applicants' claims is respectfully requested.

Based on the foregoing, Applicants respectfully submit that the Claims are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

In the event that the present invention as claimed is not in condition for allowance for any reason, the Examiner is respectfully invited to call the Applicants' representative at his Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

Respectfully submitted,

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